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ABSTRACT

The increase in the number of newspapers in Wisconsin's largest cities from 1840 to 1860 was analyzed to determine whether the coming of the telegraph (1848-1850) spurred newspaper growth significantly. Multiple regression analysis was used to control for the effects of population growth and price-level fluctuations. Even after accounting for the effects of these two variables, it was found that the telegraph had a significant impact on newspaper growth. One of the explanations for this association between increased telegraph and newspaper use is that the people in Wisconsin became more willing to buy papers once they could receive distant news relatively quickly. (RL)

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HISTORY DIVISION

Lightning Strikes the Press:
The Impact of the Telegraph on Wisconsin Newspapers

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CS 205 605

Franklin W. Scott wrote in his book Newspapers and Periodicals of Illinois, 1814-1874 that the coming of the telegraph to Illinois in 1848 catalyzed the establishment of daily newspapers. As evidence, he noted that in downstate Illinois only two dailies existed before 1848, but that by 1856 thirty-one had started.[1] Scott's evidence, however, fails to prove that the telegraph had anything to do with the dailies. During the years those dailies started, Illinois was in flux. Its population more than doubled drom 1850 to 1860, railroads in the state expanded from 160 miles in 1851 to over 2,000 in 1856, and economic conditions throughout the United States fluctuated greatly in the mid-nineteenth century, partly because the Industrial Revolution was transforming the country's economy.[2] Such factors besides the telegraph could have been responsible for the growth in daily papers that Scott noted.

This study tests the hypothesis that Scott posited: that the coming of the telegraph spurred the establishment of newspapers. The growth in the number of newspapers in ten Wisconsin towns from 1840 through 1859 is examined, and the impact of the telegraph on that growth is assessed. But unlike Scott's analysis, this study is concerned with the starting of all newspapers, including weeklies and semi-weeklies, not just dailies. Moreover, this study uses multiple regression analysis to sort out the effect on newspaper growth of population growth, economic fluctuations, and telegraph expansion.

METHODS

The ten largest towns in Wisconsin (according to 1850 population) that had at least one newspaper by 1850 were selected for examination.[3] The telegraph entered Wisconsin early in 1848, and during that year it reached four of the ten selected towns; in 1849 it spread to two more,

and by the end of 1850 it had reached the remaining four towns.[4] Therefore, it was anticipated that the impact of the telegraph on newspaper growth in the selected towns would be most apparent during the three-year period of telegraph expansion, 1848 through 1850. Notably, Wisconsin had only 30 miles of railroad tracks in 1851; hence, railroads almost certainly had no effect on Wisconsin newspaper growth before that year.[5]

Multiple regression analysis makes it possible to determine how much effect several independent variables had on a dependent variable and to test whether a single variable had an impact independently of other variables. The dependent variable in the multiple regression equation used in this study is: total yearly net number of newspapers in the ten selected Wisconsin towns from 1840 through 1859 (referred to hereafter in terms of the regression analysis as newspaper growth). The three independent variables are: (1) the yearly total population of the ten towns from 1840 through 1859 (population); (2) the yearly value (1840-1859) of an index of Wisconsin farm prices, which reflected changes in the state's economic conditions (farm prices); (3) the number of the ten selected Wisconsin towns that had a telegraph in each year from 1840 through 1859 (telegraph). The appendix explains how the data for each variable were derived and gives the data used in the multiple regression analysis.

The farm prices variable deserves further comment. In general, increases in an economy's price level act as a stimulus to economic growth, and decreases in the price level act as a brake. The antebellum U.S. economy was subject to periodic booms and busts, partly because government imposed only lax control on monetary prictices. Thus, one would expect the growth of most nineteenth century U.S. industries to be

affected by fluctuations in price levels. Wisconsin was predominantly an agricultural state around mid-century, and therefore farm price changes should be a good barometer of fluctuations in Wisconsin's economic activity.[6]

RESULTS

Figure 1 shows the total net number of newspapers operating in the ten selected Wisconsin towns in each year from 1840 through 1859; the dotted lines mark off the three-year period during which the telegraph spread to those towns. As can be seen, newspaper growth accelerated during that three-year period. To be precise, from 1840 through 1847, an average of 1.5 new papers per year appeared in the ten towns; from 1848 through 1850, 4.0 new papers per year appeared; and from 1851 through 1859, 1.67 new papers per year appeared. In other words, the rate of growth of new papers more than doubled while the telegraph was spreading through the state.[7]

Figure 1 here

It is also illuminating to examine the relationship between newspaper growth and town size. Of the twelve net newspaper starts from 1848 through 1850, eleven were in the five largest towns. Figure 2 details newspaper growth in those towns. As can be seen, there is a strong correlation between the population in the towns and newspaper growth; Milwaukee, which had an 1850 population greater than that of the other four towns combined, had six of the eleven net starts. (Five of those new Milwaukee papers were dailies; all the new papers in the other towns were weeklies.) Viewing all five towns together, it can be seen that the eleven net starts from 1848 through 1850 exactly doubled the number of papers in those towns before 1848. Then, in the nine years from 1851 through 1859, there were only nine more net newspaper starts. The implication of these figures is that there might have been a relationship between newspaper growth, the coming of the telegraph, and the size of Wisconsin towns.

Figure 2 here

The question still remains whether factors besides the telegraph could have accounted for the spurt in newspaper growth. Multiple regression analysis helps answer the question.[8] The standard form of a multiple regression equation with three independent variables is:

$$Y' = A + B_1X_1 + B_2X_2 + B_3X_3$$

The values in the equation describe the strength of the linear relationship between a dependent variable and several independent variables. In graphical terms, the formula "fits" a regression (or prediction) line through a dispersion of dependent-variable data points in such a way that the line is as centrally located as possible. In the formula, Y' is the predicted dependent variable value for any given independent variable values, and the range of all possible values of Y' constitutes the regression line. "A" (a constant) is the value of Y' when all the independent variables equal zero. The X's represent the three independent variables, and the B's are the unstandardized regression coefficients, which show how much Y' would change for a unit change in an independent variable. In the multiple regression equation used in this study, Y' is predicted newspaper growth, X_1 is population, X_2 is farm prices, and X_3 is telegraph.

As a first step in determining the impact of the independent variables on newspaper growth, it is useful to inspect the correlation coefficients between the variables in this study. (A correlation coefficient indicates the degree to which two variables are interrelated, with a perfect positive correlation equaling plus one, and no correlation equaling zero.)

Figure 3 here

Figure 3 presents the correlation coefficients for all the variables in the study. The first column of the table shows that the dependent

variable, newspaper growth, correlates highly with the three independent variables. However, the second and third columns show that the independent variables are themselves highly interrelated. (All the correlations are quite high by social science standards.) The interrelationship of the independent variables makes unclear the impact of each on newspaper growth, since it obscures how much of the dependent variable's variance each accounts for.

This problem, however, can be overcome through a certain application of multiple regression. The independent variables may be entered into the regression equation in a predetermined order so that the last variable entered accounts only for variance not taken up by the prior variables. Using this procedure, the unique effect of the last variable can be statistically tested. In this analysis, population and farm prices were entered first, since the impact of telegraph was being tested. The results of this step, shown in Figure 4, indicate that population is a highly significant predictor of newspaper growth. Farm prices does not make a statistically significant contribution to the variance accounted for.[9]

Figure 4 here

In the second step, telegraph was added to the regression analysis. (The results of this step are also shown in Figure 4.) The addition of telegraph resulted in an increment to the variance accounted for of over two percent. This increment, which yields a highly significant F-ratio, means that telegraph is a significant predictor of newspaper growth even after all possible variance (including that which might therwise be attributed to telegraph) has been attributed to population and farm prices.

The statistics yielded by the final step of the regression analysis are presented in Figure 5. The first column gives the unstand coefficients (i.e., the B's in the equation). The coefficient of population is .00024, which implies that, in terms of the selected towns, the

Figure 5 here

addition of one person to the population would increase the total number of newspapers by .00024 papers, or that an addition of 10,000 people would increase the number of papers by 2.4. Since the total increase in population in the ten selected towns from 1840 through 1859 was slightly more than 105,000 people, the coefficient suggests that about 25 of the 38 new papers in this period are best accounted for by increases in population.

As noted, the impact of farm prices on newspaper growth was not statistically significant; therefore, we can omit discussion of the implications of the farm prices coefficient. The unstandardized regression coefficient of telegraph is .809, suggesting that the coming of the telegraph to the ten towns accounts for the appearance of eight newspapers. Of course, this statistic alone does not establish that the telegraph played a role in the appearance of new papers -- supportive evidence must be provided before such a conclusion can be drawn. Still the effect suggested by the regression coefficient seems entirely plausible. In the three years that the telegraph reached the ten towns, 1848 through 1850, a net total of twelve papers started. If the coming of the telegraph were responsible for the establishment of eight of those new papers, four would remain unaccounted for. But as Figure 1 shows, an average of 1.5 papers a year were appearing in then ten towns during the period before the telegraph arrived; thus, one would have expected about four new papers from 1848 through 1850 in the absence of the telegraph. In other words, the regression coefficients suggest that the spurt in newspaper growth during the period of telegraph expansion is best explained by the coming of the telegraph, not by changes in population or economic conditions.

In the second column of Figure 5, the regression coefficients have been standardized -- that is, the values have been transformed so that all three independent variables have a mean of zero and a standard deviation of one; this transformation allows the coefficients of the independent

variables to be compared, since they are being measured in the same units. The impact of population on newspaper growth is more than double that of telegraph; but it must be remembered that Wisconsin's population was increasing during the entire twnety-year period, while the number of telegraphs increased only during a three-year period. The impact of farm prices is clearly just a small fraction of the impact of the other two independent variables. It should also be mentioned that the standard error of estimate for the regression line is 1.99, meaning that on the average each predicted value of newspaper growth varies from the actual number of newspapers in a given year by about two papers.

DISCUSSION

The correlation between the spurt in newspaper growth and the coming of the telegraph raises a number of questions. First, why would the telegraph have had an effect on the number of newspapers? The answer may be that a relationship existed between the time necessary to transmit news and the salability of distant news -- that is, as soon as news could be sent via the telegraph in minutes (instead of days or weeks, as before), people became willing to spend more money on newspapers to obtain telegraphic news. Of course, this line of reasoning presumes that mid-nineteenth century Wisconsin newspapers routinely carried news transmitted by the early telegraph lines. At least some Wisconsin newspapers did. The telegraph office in Milwaukee, which opened in January 1848, had total receipts in one week of November that year of $127, of which newspapers paid $50 for press reports; during the same period, the telegraph office in Southport had $51 in receipts and the office in Racine $49, press reports representing $25 at each place.[10] It is unclear how many newspapers were paying for telegraphic reports in those towns, but a cursory examination of the Milwaukee Daily Sentinel around this time revealed that it contained

telegraphic news almost daily. The Sentinel, in fact, chided a rival paper in 1850 for drawing attention to a telegraphic report, saying that telegraphic news is "an everyday affair with the Sentinel, and therefore we make no particular mention of so ordinary an occurrence."[11] Robert L. Thompson wrote in his comprehensive history of the telegraph industry that newspapers were among the best customers of the early telegraph companies.[12]

If we can assume that some Wisconsin newspapers obtained news from the early telegraphs, there are good reasons to believe Wisconsin residents would begin buying more newspapers. Before the coming of the telegraph, most information traveled only as fast as men did.[13] Therefore, merchants, farmers, bankers and others in Wisconsin had to wait for days for distant economic information they needed, like whether ships carrying foreign commodities had arrived, or the selling price of produce in Eastern markets, or how much certain bank notes should be discounted.[14] Likewise, many in the state had a stake in legislation in Washington, D.C. Thus, some Wisconsin residents were probably eager to start buying newspapers that carried telegraphically transmitted economic and political news.[15]

Of course, a surge in the number of people wishing to buy news need not have resulted in more newspaper establishments in Wisconsin -- existing papers, one might reason, could simple have expanded their circulations. The crude technology of the day, however, would have made it difficult for many papers to have expanded very much. Virtually all the papers in Wisconsin around 1850 used flatbed hand press, which had a printing capacity of about 250 impressions per hour.[16] Thus, it would have taken a paper eight hours to print 1,000 copies of a four-page edition. Even without knowing the precise circulation of Wisconsin papers around 1850, one can see that there were limitations on circulation size. Because of

such limitations, Carolyn Dyer, in her business history of nineteenth century Wisconsin newspapers, concluded that the number of Wisconsin papers grew faster than the circulation of existing papers during the antebellum years.[17] Thus, a surge in reader interest, precipitated by the telegraph, most probably would have brought about a surge in the number of Wisconsin newspapers.

Another question is whether many Wisconsin papers could have afforded to use the early telegraphs; Dyer's study, for example, showed that the typical Wisconsin newsman in 1850 was poorer on the average than other adult males in the state.[18] Only further research can answer this question, but it is quite possible that even if only a few papers obtained reports directly from the telegraph, a general increase in reader interest still would have come about, precipitating the establishment of new papers. This is because newspaper publishers throughout Wisconsin, as well as throughout the United States, routinely sent copies of their papers to each other so they could print one another's news. The U.S. Post Office encouraged this practice by allowing newspaper publishers to send papers to each other postage free.[19] Even the two-step flow of telegraphic news implied in newspaper exchanges would have resulted in a considerable decline in the time of transmission of distant news. For example, before the coming of the telegraph, it took about twelve days for mail to get from Washington, D.C., to Milwaukee.[20] Once the telegraph came, news items from Washington could be transmitted and published in a paper within a day. Even if it took two more days for other papers in the state to get a paper that initially published such a report and publish it themselves, the total elapsed time would be about three days, or nine fewer than before the coming of the telegraph.

Still another question is whether political events could have

accounted for the spurt in newspaper growth from 1848 through 1850. Dyer found that most antebellum Wisconsin newspapers assumed the label of a political party, and she said that some of the increase in the number of newspapers was probably due to the needs of various groups to have a paper that would reflect their views.[21] Thus, to see if partisan political activity was responsible for the spurt in Wisconsin newspaper growth, one should investigate whether there was an unusually high level of political activity around mid-century. In his recent book, the Political Crisis of the 1850s, historian Michael Holt addressed this question directly, and he concluded that the years between 1848 and 1852 were notable precisely because of a decline in partisan political issues, on both the state and national levels. Among the evidence he offered for this decline in political activity is a study of voter turn-out in five midwestern states, including Wisconsin, that showed that the percentage of eligible voters who actually voted declined from 1848 to 1852, implying that there was a diminution of interest in political issues.[22] Although not conclusive on this point, Holt's research makes it seem unlikely that political issues in this period could have accounted for a rapid increase in the number of Wisconsin newspapers.

One remaining question is why was the mid-century increase in the number of Wisconsin newspapers, which coincided with the spreading of the telegraph through the state, confined almost exclusively to Wisconsin's five largest towns? The answer in part probably is that the larger towns had greater informational needs than the smaller towns, especially the need for commercial information. Another possibility is that the smaller towns could not provide enough capital to potential publishers to start new papers.

The relationship between the telegraph and new papers suggested in this study can only be tentatively accepted. Research into newspapers

themselves around the time the telegraph came could provide supporting evidence. How much telegraphic news was carried? What kinds of telegraphic news? Answering such questions might not only illuminate the relationship between the telegraph and newspapers, but enlarge our understanding of the role of information in the economic history of America.

FIGURE 1

Total Number of Newspapers in Ten Wisconsin Towns
In Each Year from 1840 to 1859

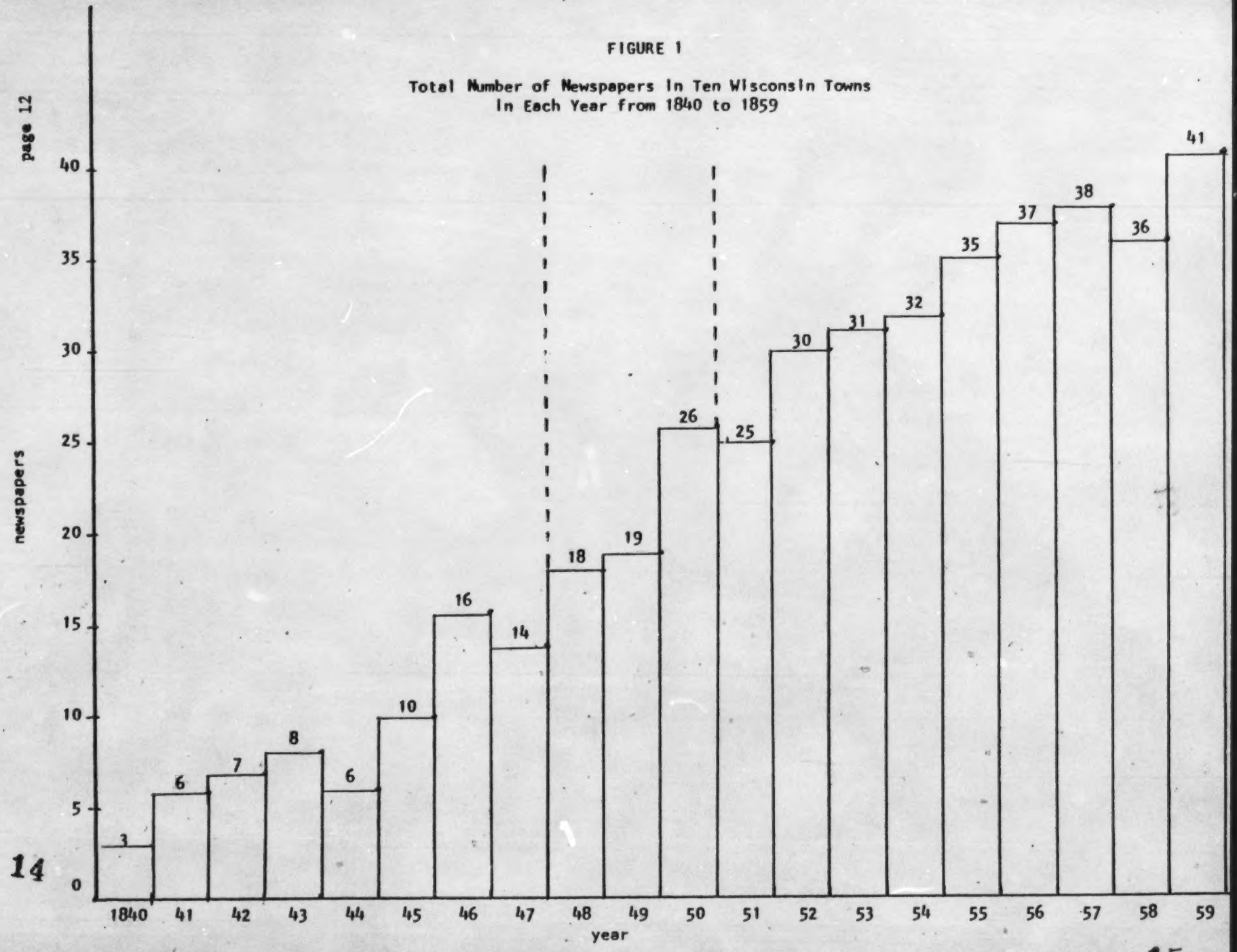

Figure 2

	1850 pop.	net np starts 1848 thru 1850	total np's before 1848	net np starts 1851 thru 1859
Milwaukee	20,061	6	7	4
Racine	5,107	2	1	3
Kenosha	3,455	1	1	1
Janesville	3,451	1	2	-1
Beloit	2,732	1	0	2
total		11	11*	9

*This is not the same as net newspaper starts from 1840 through 1847, because Milwaukee had two newspapers before 1840 (the other towns had none before 1840). Thus, total net starts from 1840 through 1847 would be only 9.

Figure 3

	newspaper growth	population	farm prices
population	.979	----	----
farm prices	.748	.755	----
telegraph	.933	.887	.623

FIGURE 4

	variance accounted for*	addition to variance	f-value	(.01 level)
Step 1				
population	95.86%	----	164.73	(significant)
farm prices	95.88%	.02%	.08	(not signif.)
Step 2				
telegraph	97.91%	2.03%	161.26	(significant)

*Note: Whichever independent variable is entered first will account for a deceptively high percentage of the variance (that percentage equaling the square of the variable's correlation coefficient). For instance, had telegraph been entered first, it would appear to account for about 87% of the variance. Thus, population alone does not really account for over 95% of the variance, but its precise contribution is indeterminable.

Figure 5

	unstandardized regression coefficients	standardized regression coefficients
population	.00024	.666
farm prices	.063	.050
telegraph	.809	.311
(constant)	.22	

REFERENCES

1. Scott's book was published in 1910; see pp. lxviii-lxxi.

2. Illinois' population went up from 851,470 in 1850 to 1,711,950 in 1860; see Compendium of the Seventh [1850] Census (Washington, D.C.,, 1854), p. 102, and Population of the United States in 1860 ... The Eighth Census (Washington, D.C., 1864), p. 103. For railroad mileage, see Preliminary Report on the Eighth Census (Washington, D.C., 1862), p. 237. On the effects of the Industrial Revolution in this period, see Ralph Gray and John M. Peterson, Economic Development of the United States (Homewood, Ill.: Richard D. Irwin, Inc., 1974) pp. 223-68.

3. Those towns, their 1850 populations, and their ranking in the state by population, are: Milwaukee, 20,061 (1); Racine, 5,107 (2); Kenosha, 3,455 (3); Janesville, 3,451 (4); Beloit, 2,732 (5); Mineral Point, 2,584 (6); Waukesha, 2,313 (7); Platteville, 2,117 (9); Fond du Lac, 2,014 (12); and Green Bay, 1,923 (14). Four towns in the top fourteen were skipped over because they did not have newspapers by 1850: Benton, 2,227 (8); Dodgeville, 2,117 (10); Mequon, 2,100 (11); and Winneconna, 1,948 (13). Those four towns are located near towns of comparable or greater size, so it seems likely that they did not have newspapers by 1850 because ther were in the circulation areas of the papers in the nearby towns. For 1850 population figures, see Seventh Census of the United States (New York: Arno Press, 1976), pp. 918-24.

4. See appendix for sources of telegraph starting dates.

5. Preliminary Report on the Eighth Census, p. 237.

6. See Thomas F. Dernberg and Duncan M. McDougall, Macroeconomics: The Measurement, Analysis, and Control of Economic Activity (New York: McGraw-Hill, 1972) pp. 369-72; and Gray and Peterson, Economic Development of the United States, pp. 257-61.

7. The number of newspapers in the towns was calculated from the newspaper starting and stopping dates reported in Donald E. Oehlerts, Guide to Wisconsin Newspapers 1833-1957 (Madison: State Historical Society of Wisconsin, 1958).

8. A brief overview of multiple regression analysis can be found in Norman H. Nie, et al., SPSS: Statistical Package for the Social Sciences (New York: McGraw-Hill, 1975), pp. 320-60; the computer program described in these pages was used for the computation of the regression statistics reported in this study. A more thorough treatment of the topic can be found in Jacob Cohen and Patricia Cohen, Applied Multiple Regression/ Correlation Analysis for the Behavioral Sciences (Hilldale, N.J.: Lawrence Erlbaum Associates, 1975).

9. In order to most conservatively test the significance of population, population should be entered into the equation last. However, the correlation coefficient of population with newspaper growth is so high that we can assume it would prove significant, no matter what the test. On the rationale behind testing the unique contribution of a single

independent variable, see Robert D. McPhee and David R. Seibold, "Rationale, Procedures, and Applications for Decomposition of Explained Variance in Multiple Regression Analysis," Communication Research, volume 6, no. 3 (July 1978), pp. 345-84.

10. Ellis B. Usher, "The Telegraph in Wisconsin," Proceedings of the State Historical Society of Wisconsin (61st Annual Metting, 1914), p. 104.

11. Sentinel, Sept. 23, 1850.

12. Thompson, Wiring a Continent: A History of the Telegraph Industry in the United States 1832-1866 (Princeton University Press, 1947), p. 92.

13. On the speed of information transmission before the telegraph, see Allan R. Pred, Urban Growth and the Circulation of Information: The United States System of Cities, 1790-1840 (Cambride: Harvard University Press, 1973), p. 13: "Since the long-distance spread of information [before the telegraph] was synonymous with human spatial interaction, the speed of transmission at any given date was a function of existing transportation technology." Also see George Rogers Taylor, The Transportation Revolution, 1815-1860 (New York: Harper & Row, 1951) p. 443: Taylor calculated, for example, that a freight shipment from Cincinnati to New York City in 1851 took eighteen to twenty day.

14. See George McCune, The Extension of the Telegraph to the Northwest, 1850-1880 (unpublished dissertation, University of Minnesota, 1942), pp. 108-09, where McCune noted that when the telegraph reached Minnesota these sorts of telegraphically transmitted commercial information immediately helped Minnesota residents. For an example of how the slowness of communication affected a particular industry, see John G. Clark, The Grain Trade of the Old Northwest (Urbana: University of Illinois Press, 1966), pp. 119-21. Two monographs detailing the business arrangements used to adapt to the slowness of communication are Lewis E. Atherton, "The Pioneer Merchant in Mid-America," The University of Missouri Studies, vol. XIV, no. 2 (April 1939), and Fred M. Jones, "Middlemen in the Domestic Trade of the United States, 1800-1860," Illinois Studies in Social Sciences, vol. XXI, no. 2 (April 1939).

15. For an exposition on the relationship of the value of information to the distance and speed of transmission, see George Stigler, "The Economics of Information," Journal of Political Economy, vol. 69 (June 1958). See also James E. Grunig, "The Role of Information in Economic Decision Making," Journalism Monographs, no. 3 (December 1966).

16. Carolyn S. Dyer, The Business History of the Antebellum Wisconsin Newspapers, 1833-1860 (Unpublished dissertation, University of Wisconsin-Madison, 1978), pp. 81-82.

17. Dyer, ibid.

18. Dyer, ibid., pp. 203-04.

19. Alfred M. Lee, The Daily Newspaper in America (New York: MacMillan Co., 1937), pp. 301-03. Pred, op cit., calculated that in 1837, nearly

10,000 editorially exchanged newspapers went through the mail each day, meaning that on the average each paper in the country received seven other papers every day.

20. In 1845, for example, the Milwaukee Daily Sentinel published President James K. Polk's state of the Union message on Dec. 12, ten days after Polk gave it. The paper bragged that the message came "By our Private Express. 36 hours in advance of the Mail." Thus, the mail must have taken about twelve days to get from Washington to Milwaukee.

21. Dyer, Ibid., pp. 82, 335-337.

22. Holt, The Political Crisis of the 1850s (New York: John Wiley & Sons, 1978), chapter five entirely, "The Second Party System Undermined, 1848-1853," pp. 101-38, and especially pp. 129-30. Holt said the data on the voting in the midwestern states were originally gathered by Professor Philip Shively and are deposited in the Political Science Data Archieves of the University of Minnesota (pp. 301-02, note 30).

APPENDIX

Given below are the sources of the data for the variables of the multiple regression analysis, plus (where necessary) an explanation of how the data were derived. After that are the raw data as used in the regression computations.

Sources of Data

Newspaper Growth

Net growth in the number of Wisconsin newspapers from 1840 through 1859 was calculated using Donald E. Oehlerts, Guides to Wisconsin Newspapers, 1833-1957 (Madison: State Historical Soci ty of Wisconsin, 1958). This source gives the starting and stopping dates for all newspapers that published in Wisconsin before 1958. Entries in the book are listed under the towns and cities in which they published. Every newspaper listed between 1840 and 1859 under one of the ten towns examined in this

counted as a new paper, so long as its period of publication was not entirely withing one calendar year. To compute net totals for each town for each year, all stops in a year were subtracted from all starts in a year.

Telegraph Starting Dates

Two sources were used to determine the dates that the telegraph arrived in the ten selected towns. Most of the dates were found in the Milwaukee Daily Sentinel; finding the information was not difficult, since the Sentinel is well-indexed. Also, some of the dates were found in Ellis B. Usher, "The Telegraph in Wisconsin," Proceeding of the State Historical Society of Wisconsin (61st Annual Meeting, 1914). The starting dates culled from these sources ranged from Jan. 17, 1848, for Milwaukee (this was the first telegraph in the state), to Nov. 11, 1950, for Green Bay.

Population

Total population figures for Wisconsin are available in the decennial federal censuses of 1840, 1850 and 1860; in Wisconsin Gazeteer (Madison, 1853) for the years 1842, 1846, and 1847; and in Blue Book of the State of Wisconsin, 1885 for the year 1855. The federal census of 1850 (supra, note 3) also gives the 1850 populations of Wisconsins towns and cities. Deriving population data involved two steps. Fi st, all of the total population figures had to be reduced to reflect just the sum of the populations of the ten selected towns. Doing this was fairly simple. I summed the 1850 populations of the ten towns and then calculated the percentage of the total 1850 Wisconsin population represented by that summation; I then multiplied all the total population figures by that percentage. In the second step, population figures had to be derived for each of the years between 1840 and 1860 for which no census was available. To get these figures, I computed linear interpolations between the figures for every two known years. The assumption implicit in this computation -- that Wisconsin population growth was linear during these years -- probabl is not far from correct. A linear regression line fitted through the seven known population data points accounts for 99.3 percent of the variance yielded by those points.

Farm Prices

The data for farm price in found in "Wisconsin Farm Prices -- 1841 to 1933," by W.F. Mortenson, et al., in Wisconsin Research Bulletin 119, Wisconsin Agricultural Experimental Station (November 1934), pp. 1-80. The article presents the monthly and yearly prices for thirty-four Wisconsin farm products. The prices reported, wrote the authors, "are representative prices paid to producers at the initial sale which is usually at the nearest town market." The sources for the prices included

newspapers, business and farm records, state and federal records, and other sources. The article provides an index of yearly farm prices, computed from the prices of all the products examined. The index is a constant-price index, meaning that the actual prices for any given year are divided by the prices for a base-price period. The base-price period was used/January 1910 through December 1914. The index began with the year 1843; therefore, the index figure for 1843 was used for the years 1840-42 in the regression computations.

Data Used in the Regression Computations

Year	Population in towns	Farm price index	Telegraphs in towns	Total papers in towns
1840	4,642	43	0	3
1841	5,657	43	0	6
1842	6,672	43	0	7
1843	10,827	43	0	8
1844	14,982	56	0	6
1845	19,137	52	0	10
1846	23,292	52	0	16
1847	31,582	49	0	14
1848	36,333	42	4	18
1849	41,085	48	6	19
1850	45,811	54	10	26
1851	53,230	49	10	25
1852	60,626	56	10	30
1853	68,022	52	10	31
1854	75,419	59	10	32
1855	82,816	66	10	35
1856	89,529	77	10	37
1857	96,243	75	10	38
1858	102,956	58	10	36
1859	109,669	57	10	41